AMENDMENTS TO THE CLAIMS

Listing of Claims:

This listing of claims will replace all prior versions, and listings of claims in the application:

1. (Currently Amended) A process for the synthesis~~, by inverse bead polymerization of a monomer phase,~~ of a ~~bead-like~~ bead-shaped, cross-linked, hydrophilic copolymer ~~which has binding activity toward ligands containing nucleophilic groups, which~~, comprising:

radically polymerizing a monomer phase, in a bead polymerization process, in the presence of a polymerization initiator and a protective colloid,

the monomer phase comprising ~~comprises~~:

monomers, and

a diluent,

the monomer phase being present during the polymerization in dispersed form as droplets in a dispersion medium comprising an organic solvent selected from the group consisting of aliphatic hydrocarbons with 5 to 7 carbon atoms;

to thereby obtain said bead-shaped, cross-linked, hydrophilic copolymer, the copolymer having a binding activity toward ligands containing nucleophilic groups,

~~which contains~~ wherein said monomer phase comprises as monomers

a) 5 to 40 wt% of hydrophilic monomers which contain a vinyl group, ~~can~~ said hydrophilic monomers being capable of ~~undergo~~ radical polymerization, and being capable of forming ~~and form~~ at least 10% aqueous solutions at room temperature,

b) 30 to 50 wt% of monomers which contain a vinyl group and an additional functional group, ~~can~~ said monomers being capable of ~~undergo~~ radical polymerization and~~,~~ being capable of forming at least one covalent bond in a ~~polymer-like~~ reaction with ~~the~~ at least one nucleophilic group of a ligand, ~~groups of the ligands, can form covalent bonds~~

c) 20 to 60 wt% of cross-linking monomers which contain two or more ~~ethylene-type~~ ethylenically unsaturated polymerizable groups ~~and can~~, said cross-linking monomers being capable of ~~undergo~~ radical polymerization,

~~with the proviso that~~ wherein a), b) and c) add up to 100 wt%,

~~which uses~~ wherein said monomer phase comprises as diluent a mixture of methanol and water in the ratio of 1:1.0 to 1:4.0,

wherein ~~the monomer phase being dispersed as droplets in a dispersion medium comprising an organic solvent chosen from the aliphatic hydrocarbons with 5 to 7 carbon atoms, the~~ a ratio of monomer phase to dispersion medium ~~ranging~~ ranges from 1:2.0 to 1:4.0, and ~~which in this form is subjected to radical polymerization in the presence of a polymerization initiator and a protective colloid, with the proviso that the~~

wherein a ratio of monomers to diluent ranges from 1:1.7 to 1:2.4.

2. (Currently Amended) ~~A~~ The process according to Claim 1, wherein ~~there are used as~~ said monomers are

a) acrylamide, ~~and/or~~ methacrylamide or mixtures thereof,

b) glycidyl methacrylate, ~~and/or~~ allyl glycidyl ether or mixtures thereof,

c) methylenebisacrylamide or methylenebismethacrylamide.

3. (Currently Amended) ~~A~~ The process according to Claim 1, wherein said organic solvent is cyclohexane. ~~is used as the organic solvent~~.

4. (Currently Amended) A support polymer material ~~which can be synthesized~~ obtained by ~~a~~ the process according to Claim 1, ~~wherein it has~~ said support polymer having a binding capacity for penicillin amidase from *E. coli* of at least 220 ~~[~~U/g moist~~]~~, ~~resulting from the~~ based on a reaction of 1530 units of penicillin amidase with 1 g of said support polymer material, and

~~exhibits~~ said support polymer having a swelling factor of at most 1.5.

5. (Currently Amended) ~~The use of~~ A method of binding proteins, comprising:

contacting the support polymer material according to Claim 4~~, for binding of~~ with at least one protein ~~proteins~~.

6. (Currently Amended) ~~The use of~~ A method of binding enzymes, comprising:

contacting the support polymer material according to Claim 4 ~~5, for binding of~~ with at least one enzyme ~~enzymes~~.

7. (Currently Amended) ~~The use of~~ A method of binding antibodies, comprising:

contacting the support polymer material according to Claim 4 ~~5, for binding of~~ with at least one antibody ~~antibodies~~.

8. (Currently Amended) ~~The use of~~ A method of chromatography, comprising:

contacting the support polymer material according to Claim 4~~, in chromatography~~ with at least one compound.

9. (Currently Amended) ~~The use of the~~ A method for synthesis of pharmaceuticals, comprising:

synthezising a pharmaceutical in the presence of the support polymer material according to claim 4 ~~for synthesis of pharmaceuticals~~.

10. (Currently Amended) ~~The use~~ A method for stereospecific synthesis of chiral substances, comprising:

synthezising a chiral substance in the presence of the support polymer material according to claim 4 ~~for stereospecific synthesis of chiral substances~~.

11. (New) The process according to Claim 1, wherein said monomer a) is a methacrylamide.

12. (New) The process according to Claim 1, wherein said functional group of monomer b) is an oxirane group.

13. (New) The process according to Claim 1, wherein said ligand of said nucleophilic

group is an oxirane group.

14. (New) The process according to Claim 1, wherein said monomer c) is N, N'-methylenebismethacrylamide.

15. (New) The process according to Claim 1, wherein said ratio of monomers to diluent is from 1.9 to 2.1.

16. (New) The process according to Claim 1, wherein said ratio of monomer phase to dispersion medium is from 1:2.8 to 1:3.3.

17. (New) The process according to Claim 1, wherein said protective colloid is a copolymer comprising 95 parts of n-butyl methacrylate and 5 parts of 2-trimethylammoniumethyl methacrylate chloride having a weight average molecular weight of from 30,000 to 80,000.

18. (New) The process according to Claim 1, wherein said copolymer has a size of from 50 to 500μm.

19. (New) A method of covalently binding of a ligand, comprising:

contacting the support polymer material according to Claim 4 with a ligand;

wherein said support polymer material has an oxirane group.

20. (New) A polymer beads loaded with a ligand and obtained by the method according to Claim 19.

21. (New) A support polymer material, having a binding capacity for penicillin amidase from *E. coli* of at least 220 U/g moist, based on a reaction of 1530 units of penicillin amidase with 1 g of said support polymer material, and

said support polymer having a swelling factor of at most 1.5.

BASIS FOR THE AMENDMENT

The claims have been amended to better conform to accepted U.S. claim format.

New Claims 11-21 have been added.

New Claim 11 is supported at page 5, 3rd paragraph.

New Claim 12 is supported at page 5, last paragraph.

New Claim 13 is supported at page 5, last paragraph.

New Claim 14 is supported at page 6, 2nd paragraph.

New Claim 15 is supported at page 7, 1st paragraph.

New Claim 16 is supported at page 7, 3rd paragraph.

New Claim 17 is supported at page 7, 4th paragraph.

New Claim 18 is supported at page 8, 1st paragraph.

New Claim 19 is supported at page 9, 1st paragraph.

New Claim 20 is supported at page 9, 2nd paragraph.

New Claim 21 is supported by Claim 4 as originally filed.

No new matter is believed to have been added by entry of this amendment. Entry and favorable reconsideration are respectfully requested.

Upon entry of this amendment Claims 1-21 will now be active in this application.